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ABSTRACT

This field trip guide, designed for use in specific state parks, is also a guide useable in general by teachers who are not outdoor-types. The guide is divided into three sections. The first section includes information for teachers concerning the assembly of a successful field trip package. The second section contains reproducible self-guiding activity sheets with answers and teaching suggestions. The third section includes activity sheets for the parks, to be assembled into student field books. Activity designs can be modified for other localities. (RE)

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POINT MUGU-LEO CARRILLO TEACHER'S GUIDE

PART II

The Main Event
What to Do at the Park

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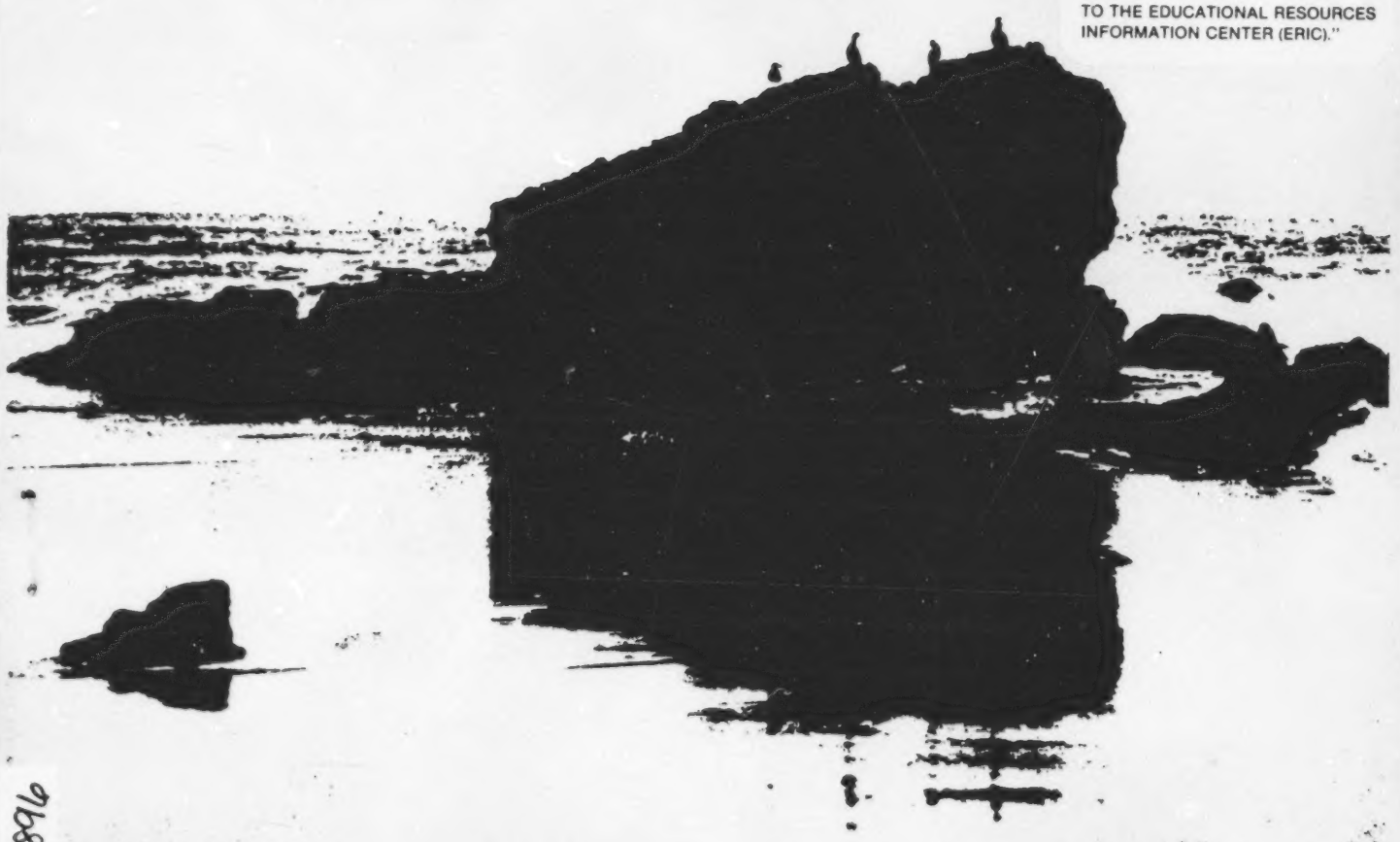

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POINT MUGU-LEO CARRILLO

TEACHER'S GUIDE

Part II

The Main Event
What to Do at the Park or Beach

By

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Dear Teacher:

This field trip guide is designed for classroom teachers who are not the outdoors type, have limited preparation time, and want to provide real learning experiences for their kids. Welcome to your state park!

The book is divided into three sections. In the front is information for teachers on how to assemble a successful field trip package. The second section contains reproducible, self-guiding activity sheets, with anwsers and teaching suggestions. These are intended to be run off and given to adult group leaders. In the third section of the book are the same activity sheets without the answers, to be made into student fieldbooks.

The purpose of this guide is to provide you, the classroom teacher, with the means of promoting intelligent, informed use of our State Park System. The key to a successful field trip, of course, is safety first – for us, and for the environment.

Steve George
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INTRODUCTION

The activities are based on groups of four to six students, or "6-packs." The size of groups will actually depend upon the amount of adult help you can muster for the trip. The state parks require a minimum of one adult per ten students. Each student should have a fieldbook and a pencil. Each group leader will need a fieldbook key.

Student activities are designed so that students at different grade levels can take part in them with varying degrees of sophistication. Many of the questions are intended as discussion starters – answers may be written in if desired, or a good discussion may suffice. Many possible projects to extend learning are hinted at; specific student interest should help determine just how far to carry an idea.

Make these activities yours! Adapt them to suit your needs! If your time at the parks is limited, use your time to gather basic facts – to observe and collect data – and complete the more long-winded projects when your're back in the classroom. The follow-up activities in Book I are designed to allow kids to share their own unique experiences and perceptions of the trip. These activities can help further that end!

There is a built-in frustration factor here – you just can't do it all! Some kids will always want to do what other groups are doing, and not what you think they should do. So it is imperative you make it clear that by breaking into groups, the class as a whole can cover the most ground (literally). It is therefore important that every member be ready to help others see what he saw, smell what he smelled, and touch what he touched. Then, if your students are inspired to return to the state parks and catch up on what they missed, so much the better. They will have had a major learning experience, and may even be anxious to show off some of their new-found knowledge to the folks, and younger brother or sister! The first time a kid comes in on a Monday and says, "Guess where we went this weekend...and boy, did I show them a lot," you know that you've done your job well.

Activities are also divided into different skill areas. First are observation questions, through which the students acquire a common data base. Next are thought questions, which ask them to make inferences from the available data. Lastly, values questions ask students to apply their knowledge to make choices and decisions. Throughout, students are encouraged to use the full range of their senses, and to work together to better understand their environment.

SECTION I.

FOR
THE
TEACHER

Fieldbooks

Fieldbooks are activity sheets put together to effectively guide each student group during the field trip. A student with a fieldbook in his hands will have a very visible sense of purpose. The emphasis is on learning, not just "having a good time."

Fieldbooks may be collected after the trip. They may serve as source books for all manner of projects: group or individual, oral, written, tables, charts, graphs, reports, art projects, creative writing, and so on. Suggestions for additional activities can be found on pages 70-71.

Fieldbooks are intended as springboards for further study, not just an end in themselves. As such, it is best if students are not given grades on their work in the fieldbook. It has been the experience of the author, and others working with him, that when students are given a grade, they see that as the end of the effort, and focus on the grade, rather than the work itself. General written comments of a positive sort are best, but don't go over the books with a fine-toothed comb.

So, before the trip, decide which areas each group will visit, select the worksheets needed, and make copies of the fieldbook for each student and leader. Allowing kids to decorate the covers may be a valuable motivational activity before the trip, or a good observation-memory exercise afterward. Covers may also be color-coded for ease in identifying groups – just use different colors of construction paper.

Even though the group leaders' fieldbooks are self-guiding, it would be a good idea if leaders had a chance to look through the Data Book (Book III) in this series. You may want to take it on the trip as a reference.

One final word: fieldbooks tend to get soggy at tidepools. It might be a good idea to keep the Carrillo sections separate from the Mugu sections. One parent even suggested laminating the identification sheets for the tidepools and having the kids work on them with grease pencils. Saves running them off each time, too. Consider having one set of guides for each group: a Chief Identifier, a Secretary, and several Hunters, all kept in line by the group leader. Interesting possibilities. The final decisions rest with you, the expert – the successful classroom teacher. Happy hunting!

LEARNING OBJECTIVES
OR
WHY ARE WE DOING ALL OF THIS?

Overall Objectives

As a result of these experiences and activities:

1. Students will observe, classify, draw conclusions, and make value judgments about human use of the environment.

2. Students will develop an understanding of people's roles as stewards, or caretakers, of the environment, rather than exploiters.

3. Students will see examples of the interdependence of all living things.

4. Students will give examples of how living things must change to survive in a changing world (adaptation).

5. Students will have practice in using skills of observation, listening, classification, note taking, measurement, map reading, symbol development, identification, and group process skills.

6. Students will learn about the State Park System, and what it has to offer them. Students will have the opportunity to evaluate the effectiveness of existing park system facilities, and to realize their responsibility as citizens. That is, that citizens not only provide recreation areas, but participate in their improvement as well.

Specific Objectives for Individual Lessons

Area of Study	*Objectives*
	Students will:
Display Board	Acquire a common data base, receive instructions on use of fieldbook.
Campground	Recognize availability of choice in camping style. Share past experiences and future choices regarding camping.
Noise Survey (To be repeated at several sites)	Actively "collect" sounds of the environment and classify them as being natural or human-made.
Grassy Circle	Reinforce concepts of diameter, radius, and circumference; pace off distances. Recognize desirable characteristics of group meeting areas.
Trail Sign	Learn to identify rattlesnakes and poison oak. Redesign sign for nonreaders. Explore values and concerns regarding smoking's effects on the human body and the environment.
Overlook Trail	Define watershed and understand its effect on living things.
Hanging Valley	Observe differences between forest community and grassland community.
Trail Past Hanging Valley	Identify topsoil, subsoil; recognize role of reducers in soil formation.
Overlook Ridge	Explore concept of time as change. Examine people's basic need for survival. Discuss Chumash adaptations to their environment.
Burned-out Trees	See an example of adaptation to extreme conditions. Learn functions of different tree parts.
Big Sycamore Canyon	Analyze natural vs. people-made litter. Expand skills of sensory awareness.
Mapping	Interpret and invent map symbols.

SUGGESTED WALKS OF ABOUT TWO HOURS

(Also the sequence of pages in fieldbooks for different groups.)

Point Mugu

WALK 1. Display Board, Campground, Grassy Circle, Burned-out Trees, Mapping, Noise Survey.

WALK 2. Display Board, Campground, Big Sycamore Canyon, Burned-out Trees, Mapping, Noise Survey.

WALK 3. Display Board, Campground, Trail Sign, Overlook Trail, Hanging Valley, Noise Survey.

WALK 4. Display Board, Campground, Trail Sign, Overlook Trail, Trail Past Hanging Valley, Overlook Ridge, Noise Survey.

By starting your walks with the whole class assembled around the Display Board (see map), the teacher can effectively set the mood for the entire learning experience. Students are immediately asked to *observe* their surrounding, in different ways, for specific reasons. *Responses are discussed and/or recorded* in their fieldbooks. *Suggestions* are given for more *in-depth study* of this particular area. This will be the sequence at each successive site. Students get into the expected routine under the familiar direction of the teacher, and adult leaders get a quick lesson in teaching!

Timing, of course, is approximate. It's hoped the adult leaders will find these activities open-ended enough to allow for the special interests of their own groups to prevail. And feel free to design your own routes – these are only suggestions!

SUGGESTIONS FOR LEO CARRILLO STATE BEACH

Activities in this book for Leo Carrillo State Beach are not so tightly structured as those for Point Mugu State Park, for several reasons. At Carrillo, learning activities will be concentrated into a rather small area, the tidepools. With less ground to cover, the entire class may be involved in the same basic studies. The diversity of organisms to be found at the tidepools will still provide for much sharing of information in the classroom follow-up.

I kept my class in groups of four to six, gave each group an identification key, and announced I would award two points for each organism found and thoroughly described in writing. An octopus counted for five points. The group with the most points, verified by me, would win a prize upon return to the classroom. To keep the groups together with their group leaders, I set up this procedure:

1. When someone finds an organism to be "keyed out" (identified), the student raises a hand high. Shouting is discouraged!

2. The group forms a circle around the finder and his find, and tries to identify it.

3. The proper notes are entered on the key. No written description, no points awarded!

4. Complete only one specimen at a time, from start to finish.

5. Group leader gives the okay to "start hunting again."

This simple competition among groups to do a thorough job of investigating and reporting really worked with my kids! Of course, as I have tried to stress throughout, this is only a suggestion. *You* are the expert on what will work with your class!

At the end of the student section are additional activities. These may be assigned, or selected by groups or individuals. For more detailed information and teaching suggestions, I highly recommend the Ventura County Schools publication, *Tide Pool Resource Protection Plan, 1973-1974.*

TEACHER'S
SUGGESTED FIELD TRIP CHECKLIST

1. Prior visit made to site.
2. Administrative authorization and reservation (see school group reservation request form, next page).
3. Pre-trip orientation initiated (Book I activities).
4. If needed, tide level verified (see tide charts available from fish and bait stores).
5. Transportation arranged.
6. Financial arrangements made if necessary.
7. Letter/permission slip to parents (see page 11).
8. Group leaders obtained.
9. Written permission from parents returned.
10. State parks notified, at least 2 weeks in advance.
11. Arrangement for substitute if necessary.
12. Data sheets prepared (fieldbooks).
13. Post-trip follow-up prepared (Book I).
14. First-aid kit ready.
15. Name tags ready for students and adults.
16. Equipment and supplies ready and packed.
17. Pre-trip orientation completed (field trip rules, page 12).
18. Check on transportation one day before trip.
19. Final review of checklist.

NOTE: Review of this checklist should be made often during preparations, including morning of trip.

Items listed are in suggested order.

Additions and deletions in this list may be made appropriate to your individual situation. However, a checklist should exist!

Dear Parents,

Our field trip to Pt. Mugu State Park and Leo Carrillo State Beach is coming up soon, on _____, _____. The trip will include both dry-land nature walks at Mugu and tidepooling at Carrillo. This means probably getting wet from the knees down.

Here is a checklist to help you prepare your child for a rewarding learning experience.

Plenty of sleep the night before

A good breakfast

Enthusiasm at home

Sack lunch

Good walking shoes

Extra-heavy socks (Optional)

Extra pair of socks

Tennis shoes for tidepooling

Outdoor-type clothes, long pants

Jacket or sweater

Small towel

Thanks for your support!

Sincerely,

FIELD TRIP RULES FOR STUDENTS

1. Safety first – for us *and* the environment.

2. Stay with your group leader at all times.

3. Please don't take anything from the park – do not remove anything alive, animal or plant, or any rocks.

4. Actions speak louder than words – please act as a good example to others!

5. Take only memories...leave only footprints. The parks should be cleaner after we have been there. Help pick up after careless people!

6. Guard your fieldbook carefully – it is your ticket to an exciting learning adventure! Your group leader can tell you more.

7. Above all – HAVE FUN, AND HAPPY LEARNING!

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SECTION II

FOR THE GROUP LEADERS

FIELDBOOK KEY FOR GROUP LEADERS*

Welcome to your state park. Your help on this field trip is greatly appreciated! Here are a few tips to ensure a successful learning experience.

1. The walks are quite easy, and we hope that you find yours interesting.

2. Don't be afraid to be firm with the students you are supervising. Keep your group together at all times, and help them through their fieldbooks. Be sure to let them know they are the very best group!

3. In case of emergency, locate the teacher, the bus driver, or a ranger for assistance.

4. This "Fieldbook Key" contains the information needed to answer most of the questions in the kids' fieldbooks, plus suggestions to help you present activities. You are an instant expert!

5. Even experts get stuck sometimes. If a question comes up that you cannot answer, don't hesitate to say, "I don't know." You might want to add, "That's a good question for the teacher," or "Let's look that up later."

6. Try to look through the Data Book, Book III in this series, before the trip. It contains interesting information about these state parks and the Chumash Indians who once lived here.

7. Above all – HAVE FUN, AND HAPPY LEARNING!

*The answers in this section are italicized.

DISPLAY BOARD

AFTER THE TRIP IS OVER, YOU MIGHT BE ASKED TO DESIGN YOUR OWN DISPLAY BOARD

Observation Questions:

1. What two communities can be seen from here?

   Chaparral-covered hills, sycamore forest.

2. What other community can be heard?

   Freeway (people), ocean (sometimes).

3. Take a noise survey – listen carefully!

4. What are the four main topics shown?

   1. *Map of the park*
   2. *Fire*
   3. *Chumash Indians*
   4. *Things to look for as you walk*

5. List some of the things you see on the board.

Natural	Human-Made
1. *Wood*	1. *Glass*
2. *Dirt*	2. *Paint*
3. *Etc.*	3. *Etc.*

6. Why are the concrete slabs here?

   Support display board. Allow groups to meet here without standing in mud.

Values Questions:

1. Why is the display board located right here?

   Would you put it somewhere else?

   Where?

   Why?

2. Look at the building materials used. Think about the effects of people and nature, then complete this chart:

Material Used	Advantages (+)	Disadvantages (-)
Glass	*Protects displays*	*Breaks*
Wood	*Looks attractive*	*Rots, burns, gets termites, needs paint*
Concrete	*Long-lasting*	*Looks out of place in a natural area*
Paint	*Protects, beautifies*	*Must be redone, flammable*

NOISE SURVEY

Listen closely! Then list all the noises you hear, under these headings:

Place	Natural	Human-Made
Display Board	*Wind*	*Radio*

Instructions:

1. Suggested listening time = 2-4 minutes.
2. Have students hold up number of fingers for number of minutes they thought they were silent.
3. Circle the column having more noises.

CAMPGROUND

DON'T BE NOSY – BUT...

Observation Questions:

1. Take a quick glance at how people are camped. DON'T be nosy; just look long enough to fill in this chart.

   Number of Campers in:

   – Tents
   – Campers
   – Vans
   – Trailers
   – Motorhomes
   – Cars only

   Which category has the most?
   The least?
   How have you gone camping?
   If you had your choice, which way would you go?
   Why?

2. If you meet a ranger while you're here, ask him or her how most people camp in this park, such as in trailers, tents, vans, motorhomes. How was if different ten years ago?

   The number of campers changes with the seasons. Does their style of camping also change?

   (Go ahead – ask the ranger!)

Values Questions:

Is any one way of camping the "best"?
How and why? Defend your answer!
How would you describe a "good" camper? Why?

GRASSY CIRCLE

***THIS IS A PLACE WHERE GROUPS OF CAMPERS CAN MEET FOR FUN OR HAVE PROGRAMS. WHY WAS THIS SPOT CHOSEN?

Observation Questions:

1. Take a noise survey. (Label "place" as Grassy Circle).

2. Find the approximate center of the grassy circle. What is its
   diameter? _____ paces
   radius? _____ paces *(These will vary)*
   circumference _____ paces
   Why is it hard to figure these out? *Not a perfect circle, length of paces varies.*

3. What color is the grass in the center? *Green.*
   On the edges? *Brown.*
   How can you explain this difference? *More water in center; partial shade around edges? More foot traffic around edge?*

4. Find 3 things in the grass and share them with your group (but don't remove living things).

GRASSY CIRCLE

Thought Questions:

Discuss:

What other state park meeting areas have you been to?
How are they similar to this one?
How are they different?

Values Questions:

1. Should anything be added to this site? Draw up plans for the improvements you would make.

   (This can be done either at the park or back in class. You may wish to submit a polished copy to the state park headquarters, signed by the designers.)

2. We all know the dangers of fire. What are some of the benefits of fire?
   Campfires?
   Fellowship, warmth, protection, cooking.
   Wildfires?
   Renewal of wild areas: eliminate overgrown vegetation.
   Controlled burns?
   Same as above and wildfire control through firebreaks.

   What has been done in this area to reduce the dangers of fire?

TRAIL SIGN

DESIGNS ON A SIGN

OBSERVATION QUESTIONS:

1. What 2 things are we warned against?

   Poison oak, rattlesnakes

2. How can poison oak be identified?

   Three rounded leaves; color varies from green to light green to red. "Leaflets three, let it be."

3. What 3 things cannot enter this area?

   1. *Motor vehicles*
   2. *Fires*
   3. *Dogs*

   Can you think of any other things that are prohibited here?

   Firearms, drugs, anything else prohibited in state park regulations.

THOUGHT QUESTIONS:

1. Can everyone who can walk also read?
   Can everyone who visits this area read English?
   Try to redesign this sign so that a nonreader could understand it. Be sure to include all 5 things we discussed. (At park or in class afterwards.)

TRAIL SIGN

SMOKIN' UP THE TRAIL

Values Questions: (discuss)

1. How do you feel about smoking on the trail?

   Could it hurt the smoker?

   Increased heart rate, shortens breath.

   How could smoking while hiking hurt the environment?

   Pollute the air; fire hazard; litter problem with matches, butts, and packaging.

2. Would you include anything about smoking on your new trail sign?

   How could you show it for a nonreader?

OVERLOOK TRAIL

THE GREATEST VARIETY OF PLANTS AND ANIMALS USUALLY IS FOUND ALONG THE WOODLAND EDGE. THIS EDGE IS A COMBINATION OF TWO QUITE DIFFERENT NATURAL COMMUNITIES. HOW DOES THE PLANT LIFE DIFFER?

Observation Questions:

1. Is it hotter or colder out here than in the grove?
   Why?

2. Take a good close look at the big green bushes here. They usually grow near a source of water. Where is the water?
   Underground stream flows through here.

3. Can you find any evidence of the fire that wiped out this area in 1971?
   Charred branches on bushes.

Discuss:

A watershed is the land area from which a stream gets its water supply. It may be smaller than a camp, or as large as several states. A "good" watershed is like a sponge – it soaks up water from rain or melting snow, slowing down the flow of extra water. A "poor" watershed, like a parking lot or bare soil, does not hold the water. Instead, it flows rapidly into streams and causes floods and muddy water. Do you think this is a "good" or a "poor" watershed? Give several reasons for your answer.

HANGING VALLEY

FOREST SUCCESSION MEANS: IF A FOREST WERE SUDDENLY RETURNED TO BARE EARTH, VEGETATION WOULD SLOWLY GROW BACK IN THIS ORDER: (1) WEEDS AND GRASSES; (2) CHAPARRAL, LIKE THE BUSHY SCRUB ON MOST OF THE HILLSIDES; AND (3) IF CONDITIONS ARE RIGHT, TREES; WHICH CAN DEVELOP INTO A FOREST.

Observation Questions:

1. Make a list of all the animal signs you see along this trail. Look for things like tracks, droppings ("scat"), burrows, feathers, nests, and others. Don't forget insects! After each sign, write the name of the animal you think left it.

ANIMAL SIGN:	**LEFT BY:**
a.	a.
b.	b.
c.	c.
d.	d.
e.	e.
f.	f.
g.	g.

Are people animals, too?

2. Is it hotter or colder out here than in the forest? Explain the difference. Give at least two reasons!
   a. *shade*
   b. *wind*

THOUGHT QUESTIONS:

Discuss on site, complete in class:

1. Using the information you gathered on animal signs, what can you say about the kinds of animals that live in the grassland? Try to give general characteristics about size, nesting habits, diet, coloration/camouflage, and special adaptations, either structural or behavioral. You may want to complete this activity back in the classroom, on a separate sheet of paper.

Discuss:

2. Would this grassy valley be a "good" or a "poor" watershed? See if you can follow the path that extra water would follow after a heavy rain. (Cup both hands together and imagine that someone is pouring water into them. Where would it flow?)

3. Which has deeper roots, trees or grasses?

   Trees.

   Which grows closer together, trees or grasses?

   Grasses.

   How might the roots affect water runoff?

   Slow down running water, prevent mudslides and siltation.

Do in class:

4. Do roots grow only straight down? Make a drawing of the best possible root system for holding soil in place. What else should it do?

TRAIL PAST HANGING VALLEY

AS WE HIKE TOWARDS THE TOP OF THE RIDGE, WATCH FOR A LARGE, CUTAWAY SECTION OF EXPOSED SOIL

Most soils have developed from various kinds of rocks over thousands of years. Actions of sun, wind, rain, frost, freezing, plants, and animals have slowly broken the rocks into smaller pieces. Soil contains living and dead organisms, air, moisture, and particles of rock. Organic materials such as leaves and animal droppings fall to the soil and sink into it. This organic material makes good plant food. The more organic stuff in the soil, the better it is for growing plants. We call this rich soil "humus."

Observation Questions:

1. Point out the topsoils. *(top layer)*
   What color is it?
   How does it smell?
   Can you guess how deep it is?
   How could we measure it without a ruler?
   Make up our own unit of measure – pencil widths, thumbnails, etc.

2. Point out the subsoil. *(directly under topsoil)*
   What color is it?
   How does it smell?
   About how deep is it?
   How is it different from the topsoil?
   More tightly packed; less organic matter.

3. What is below the subsoil?
   Describe it.

4. Can you see any plant roots?
   What layers are they in?
   Why?

Thought Questions:

1. What do we call the animals and plants that make humus – producers, consumers, or reducers?

   Reducers.

2. Which layer of soil is richest in humus?

   Topsoil.

   Why?

   Because when plants or animals die, they usually remain on the surface of the ground.

3. Where do most of the reducers live?

   Topsoil.

4. What would happen to the producers if all the topsoil were suddenly washed into the sea?

   The consumers?

   There would be drastic cutbacks in all forms of life. All living things depend directly or indirectly on plants (producers) for food and oxygen. Plants rely on topsoil for vital nutrients.

OVERLOOK RIDGE (HILLTOP)

LIFE MEANS CHANGE

If you had stood on this spot millions of years ago, the climate, vegetation, animals, and landforms would have been very different from today. Since then, mountain ranges appeared and disappeared, seas rose and fell, glaciers came and went, climates changed to warm or cold extremes. Ancient plants and animals died and became extinct long before people arrived. Their traces are now fossils in rocks. Those ancient seas, swamps, mountains, volcanoes, and glaciers can also be "read" by geologists today.

Observation Questions:

1. What has happened to your body as we've climbed the hill?

   Hotter, increased pulse (heart) rate, breathing more deeply, muscles tighten, perspire.

2. Take a noise survey.

   Label place as Overlook Ridge.

3. Which way is the wind blowing?

   In our faces.

   Which way are the waves flowing?

   Can you explain the difference?

   Waves are formed far out at sea. Wind always blows at right angles to the mountains on the coast.

4. On a clear day you can see the Channel Islands from here, Are they visible today?

   What direction are they from us?

   Which one appears to be longest?

Values Questions:

1. If you were a Chumash Indian, what things would you consider vital in your choice of a homesite?

2. Of all the places we've seen so far, where would you choose to live as a Chumash?

   Why?

Thought Questions:

In 1542 Juan Paez (Pie-ez'), the diarist with the Cabrillo expedition, wrote down the Chumash name for their village here – Mugu. How many years ago was this? Is there any way to find out how many years before Cabrillo this place was named? *No*

If so, how?

If not, why not?

Because the Chumash left no written records, nor did they number years as we do.

BURNED-OUT TREES

LOOK FOR THEM IN BIG SYCAMORE CANYON AND BY THE GRASSY CIRCLE

Observation Questions:

1. See if you can find a "daylight tree" – one with a hole burned all the way through the trunk. Is it still alive?

   (Some are alive, some are dead.)

2. How could a tree continue to live with its insides burned away?

   Which part of a tree could we call its skin? *Bark.*
   Blood? *Sap.*
   Lungs? *Leaves.*
   Mouth? *Roots.*
   Feet? *Roots.*
   Chest? *Trunk.*
   Skeleton? *Woody insides.*

   Can you think of any other "human" labels to use on a tree?

   Branches = Arms.

3. What other evidences can you find of fires?

   Charred branches on bushes.

4. How many different kinds of trees have become "daylight trees"? See how many you can find as we continue our walk.

BIG SYCAMORE CANYON

LITTER ISN'T ALWAYS A FOUR-LETTER WORD

What does this word mean to you?

BIODEGRADABLE

If you were asked to take a litter survey, the same way we've done our noise surveys, how many examples of natural litter could you find? People's litter?

Fallen leaves, twigs, and limbs are natural litter. It protects the topsoil from beating rain and thereby slows erosion. It reduces flooding by soaking up water like a sponge, helps protect young plants from freezing, and insulates soil from freezing too deeply. Natural litter also decays, and *reducers* turn it into *humus*. Some of these *reducers* are ants, slugs, snails, earthworms, and sowbugs, not to mention tiny bacteria.

Think carefully about people's litter. Can you name a reducer that eats cigaret butts? Or cans? If you drop a foil gum wrapper on the ground, will it ever return to the soil and provide nourishment for plants?

YOU CAN HELP BY PICKING UP PEOPLE'S LITTER – AND NOT DISTURBING NATURAL LITTER.

BIG SYCAMORE CANYON

WELCOME TO SYCAMORE GARDEN APARTMENTS

The forest is like an apartment house with different animals living on each floor. From the humus in the soil to leaves on the highest trees, a variety of animals find food, homes, and shelter. In the basement – worms, insect larvae, moles, gophers, and other burrowers; first floor – deer, chipmunks; upper floors – squirrels, woodpeckers; penthouse – insects, birds. Watch these different floors carefully while we are here – try to be aware of all the forest dwellers.

Observation Questions:

1. Which floor of the "apartments" has the most activity?

   Who are its most active tenants?

2. Is one floor especially noisy?

3. What do the animals who live here use for an elevator?

   Name two things.

   Wings, tree trunks, silk threads.

4. Which floor has wall-to-wall carpeting?

   First floor (ground) has a carpet of leaves.

5. Which floor would probably be the driest during a storm?

Values Question:

1. Try to imagine the view from each floor. Choose where you would live.

THE EYES HAVE IT

Observation Questions:

1. Let's go exploring for different kinds of things. See if you can find:

   2 kinds of spiders
   2 kinds of pebbles
   2 kinds of trees
   2 kinds of seeds
   2 kinds of tracks
   2 kinds of whatever else you can find!

2. Okay, now let's give our eyes a break. Your group leader will blindfold you and lead you to a tree somewhere. Your job is to experience your own tree so well with all your senses, except sight, that you can find it again on your own. Good luck!

Values Questions:

Which exercise was easier to do?
What have you learned about yourself by doing these activities?
Can this new-found knowledge help you in school, too?
In what ways?

MAPPING EXERCISES

SYMBOL LOGIC

1. Here is a map of Point Mugu State Park. Point out:

   Where we are now.
   A locked gate.
   Where the bus stopped.
   Places we've already been to.
   Places we're still going to.
   The highest point.
   A place you'd like to go.
   The direction our school is from here.

2. Use the map's scale to figure out how far we've walked so far. After the trip, help the other group to figure out where and how far they went, too!

Can be done in class or at park:

3. Study the symbols the State Park System uses to identify what's available and where. Can you think of any other forms of recreation to be found in our state parks? Here are two examples: birdwatching, taking pictures. Design your own symbols for these activities, and others. Remember, the activities shouldn't harm the environment.

Values Question:

Design a symbol for the State Park System to use to show that a park can be used for school field trips.

SECTION III

FOR
THE
KIDS

DISPLAY BOARD

AFTER THE TRIP IS OVER, YOU MIGHT BE ASKED TO DESIGN YOUR OWN DISPLAY BOARD

Observation Questions:

1. What two communities can be seen from here?

2. What other community can be heard?

3. Take a noise survey – listen carefully!

4. What are the four main topics shown?
   1.
   2.
   3.
   4.

5. List some of the things you see on the board:

Natural	Human-made
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

6. Why are the concrete slabs here?

Values Questions:

1. Why is the display board located right here?

   Would you put it in somewhere else?

   Where?

   Why?

2. Look at the building materials used. Think about the effects of people and nature, then complete this chart:

Material Used	Advantages (+)	Disadvantages (-)

NOISE SURVEY

Listen closely! Then list all the noises you hear, under these headings:

Place	Natural	Human-made

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CAMPGROUND

DON'T BE NOSY – BUT...

Observation Questions:

1. Take a quick glance at how people are camped. DON'T be nosy; just look long enough to fill in this chart.

   Number of Campers in:

   – Tents
   – Campers
   – Vans
   – Trailers
   – Motorhomes
   – Cars only

   Which category has the most?
   The least?
   How have you gone camping?
   If you had your choice, which way would you go?
   Why?

2. If you meet a ranger while you're here, ask him or her how most people camp in this park, such as in trailers, tents, vans, and motorhomes.

   The number of campers changes with the seasons. Does their style of camping also change?

   (Go ahead – ask the ranger!)

Values questions:

Is any one way of camping the "best"?
How and why? Defend your answer!
How would you describe a "good" camper? Why?

GRASSY CIRCLE

***THIS IS A PLACE WHERE GROUPS OF CAMPERS CAN MEET FOR FUN OR HAVE PROGRAMS. WHY WAS THIS SPOT CHOSEN?

Observation Questions:

1. Take a noise survey. (Label "place" as Grassy Circle.)

2. Find the approximate center of the grassy circle. What is its
   diameter? paces
   radius? paces
   circumference paces
   Why is it hard to figure these out?

3. What color is the grass in the center?
   On the edges?
   How can you explain this difference?

4. Find 3 things in the grass and share them with your group (but don't remove living things).

Thought Questions:

Discuss:

What other state park meeting areas have you been to?
How are they similar to this one?
How are they different?

Values Questions:

1. Should anything be added to this site? Draw up plans for the improvements you would make.

2. We all know the dangers of fire. What are some of the benefits of fire?
   Campfires?
   Wildfires?
   Controlled burns?

TRAIL SIGN

DESIGNS ON A SIGN

Observation Questions:

1. What 2 things are we warned against?

2. How can poison oak be identified?

3. What 3 things cannot enter this area?
   1.
   2.
   3.

   Can you think of any other things that are prohibited here?

Thought Questions:

1. Can everyone who can walk also read?
   Can everyone who visits this area read English?
   Try to redesign this sign so that a nonreader could understand it. Be sure to include all 5 things we discussed.

TRAIL SIGN

SMOKIN' UP THE TRAIL

Values Questions:

1. How do you feel about smoking on the trail?

   Could it hurt the smoker?

   How could smoking while hiking hurt the environment?

2. Would you include anything about smoking on your new trail sign?

   How could you show it for a nonreader?

OVERLOOK TRAIL

THE GREATEST VARIETY OF PLANTS AND ANIMALS USUALLY IS FOUND ALONG THE WOODLAND EDGE. THIS EDGE IS A COMBINATION OF TWO QUITE DIFFERENT NATURAL COMMUNITIES. HOW DOES THE PLANT LIFE DIFFER?

Observation Questions:

1. It is hotter or colder out here than in the grove?
   Why?

2. Take a good close look at the big green bushes here. They usually grow near a source of water. Where is the water?

3. Can you find any evidence of the fire that swept through this area in 1971?

Discuss:

A watershed is the land area from which a stream gets its water supply – it may be smaller than a camp, or as large as several states. A "good" watershed is like a sponge – it soaks up water from rain or melting snow, slowing down the flow of extra water. A "poor" watershed, like a parking lot or bare soil, does not hold the water. Instead, it flows rapidly into streams and causes floods and muddy water. Do you think this is a "good" or a "poor" watershed? Give several reasons for your answer.

HANGING VALLEY

FOREST SUCCESSION MEANS: IF A FOREST WERE SUDDENLY RETURNED TO BARE EARTH, VEGETATION WOULD SLOWLY GROW BACK IN THIS ORDER: (1) WEEDS AND GRASSES; (2) CHAPPARRAL, LIKE THE BUSHY SCRUB ON MOST OF THE HILLSIDES; AND (3) IF CONDITIONS ARE RIGHT, TREES, WHICH CAN DEVELOP INTO A FOREST.

Observation Questions:

1. Make a list of all the animal signs you see along this trail. Look for things like tracks, droppings ("scat"), burrows, feathers, nest, and others. Don't forget insects! After each sign, write the name of the animal you think left it.

ANIMAL SIGN:	LEFT BY:
a.	a.
b.	b.
c.	c.
d.	d.
e.	e.
f.	f.
g.	g.

Are people animals, too?

2. Is it hotter or colder out here than in the forest? Explain the difference. Give at least two reasons!
   a.
   b.

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Thought Questions:

Discuss On Site, Complete in Class:

1. Using the information you gathered on animal signs, what can you say about the kinds of animals that live in the grassland? Try to give general characteristics about size, nesting habits, diet, coloration/camouflage, and special adaptions, either structural or behavioral. You may want to complete this activity back in the classroom, on a separate sheet of paper.

Discuss:

2. Would this grassy valley be a "good" or a "poor" watershed? See if can follow the path that extra water would follow after a heavy rain. (Cup both hands together and imagine that someone is pouring water into them. Where would it flow?)

3. Which has deeper roots, trees or grasses?

   Which grows closer together, trees or grasses?

   How might this affect water runoff?

Do in Class:

4. Do roots grow only straight down? Make a drawing of the best possible root system for holding soil in place. What else should it do?

TRAIL PAST HANGING VALLEY

AS WE HIKE TOWARDS THE TOP OF THE RIDGE, WATCH FOR A LARGE, CUTAWAY SECTION OF EXPOSED SOIL

Most soils have developed from various kinds of rocks over thousands of years. Actions of sun, wind, rain, frost, freezing, plants, and animals have slowly broken the rocks into smaller pieces. Soil contains living and dead organisms, air, moisture, and particles of rock. Organic materials such as leaves and animal droppings fall to the soil and sink into it. This organic material makes good plant food. The more organic stuff in the soil, the better it is for growing plants. We call this rich soil "humus."

Observation Questions:

1. Point out the topsoil.
   What color is it?
   How does it smell?
   Can you guess how deep it is?
   How could we measure it without a ruler?

2. Point out the subsoil.
   What color is it?
   How does it smell?
   About how deep is it?
   How is it different from the topsoil?

3. What is below the subsoil?
   Describe it.

4. Can you see any plant roots?
   What layers are they in?
   Why?

Thought Questions:

1. What do we call the animals and plants that make humus – producers, consumers, or reducers?

2. Which layer of soil is richest in humus?
   Why?

3. Where do most of the reducers live?

4. What would happen to the producers if all the topsoil were suddenly washed into the sea?
   The consumers?

OVERLOOK RIDGE (HILLTOP)

LIFE MEANS CHANGE

If you had stood on this spot millions of years ago, the climate, vegetation, animals, and landforms would have been very different from today. Since then, mountain ranges appeared and disappeared, seas rose and fell, glaciers came and went, climates changed to warm or cold extremes. Ancient plants and animals died and became extinct long before people arrived. Their traces are now fossils in rocks. Those ancient seas, swamps, mountains, volcanos, and glaciers can also be "read" by geologists today.

Observation Questions:

1. What has happened to your body as we've climbed the hill?

2. Take a noise survey.

3. Which way is the wind blowing?

   Which way are the waves flowing?

   Can you explain the difference?

4. On a clear day you can see the Channel Islands from here.

   Are they visible today?

   What direction are they from us?

   Which one appears to be longest?

Values Questions:

1. If you were a Chumash Indian, what things would you consider vital in your choice of a homesite?

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2. How could a tree continue to live with its insides burned away? Which part of a tree could we call its skin?
   Blood?
   Lungs?
   Mouth?
   Feet?
   Chest?
   Skeleton?
   Can you think of any other "human" labels to use on a tree?

3. What other evidences can you find of fires?

4. How many different kinds of trees have become "daylight trees"? See how many you can find as we continue our walk.

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Values Question:

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THE EYES HAVE IT

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   2 kinds of spiders
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   2 kinds of tracks
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MAPPING EXERCISES

SYMBOL LOGIC

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   A locked gate.
   Where the bus stopped.
   Places we've already been to.
   Places we're still going to.
   The highest point.
   A place you'd like to go.
   The direction our school is from here.

2. Use the map's scale to figure out how far we've walked so far. After the trip, help the other groups to figure out where and how far they went, too!

Can be done in class or at park:

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Values Question:

Design a symbol for the State Park System to use to show that a park can be used for school field trips.

Leo Carrillo State Beach

IDENTIFYING INTERTIDAL PLANTS AND ANIMALS

If you have ever visited a rocky seashore, you know that a great variety of plants and animals live in tidepools (the intertidal zone). But how many of these plants and animals can you identify? How much do you know about them?

This guide is designed to help you start learning the common intertidal organisms of California. Use the references to help identify the organisms and to learn more about their biology.

Look at the drawings in this guide so you can recognize these intertidal plants and animals when you go to the seashore. Use the identification sheets to keep a record of the organisms you find. Add more sheets if you identify organisms that are not shown in this guide. You may want to make several trips to different shoreline areas to see a greater variety of organisms.

Nearly every square inch of the intertidal zone is used by one organism or another. Look everywhere – in cracks, crevices, and under rocks. Always return rocks to their original positions. Many organisms that live on the undersides of rocks will die if exposed for any length of time.

Do not collect organisms from the intertidal zone. There are few plants and animals left in tidepools because of overcollecting. For this reason, collecting is strictly regulated by the California Department of Fish and Game. Check sport fishing regulations carefully before going to the coast.

Safety at the Beach

Tides, waves, strong currents, offshore rocks, cliffs, and drift logs are all potentially dangerous. To enjoy your trips to the beach, be safe – know the hazards that exist and use common sense.

Rip currents, also called undertows, are extremely dangerous to swimmers. You can sometimes see these currents from the beach because the rapidly flowing water carries sand or mud, which discolors the water. Also, the current may carry foam from the surf, creating a trail of foam from the beach seaward. If you ever come back to swim here, avoid areas where there are rip currents. If you are caught in a current, swim parallel to the shore until you are out of the current.

Offshore rocks may look interesting and easy to reach at low tide, but when the tide comes in you may find yourself stranded. Cliffs along a beach are another hazard. They are often crumbly, so stay away from the edge.

Remember, too, whenever you are near the water always keep your eye on surf and tide. When you visit the tidepools use the buddy system, so that at least one person can watch the ocean for safety's sake.

QUESTIONS

1. What would the intertidal zone be like if everyone collected the plants and animals?

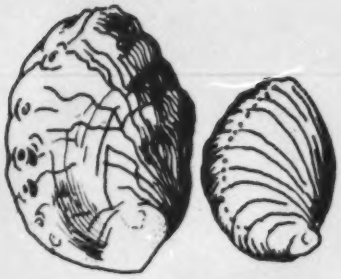
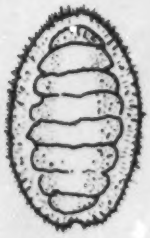
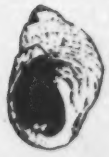
2. Are the organisms found on rocky shores different from those found on beaches or marshes? Why?

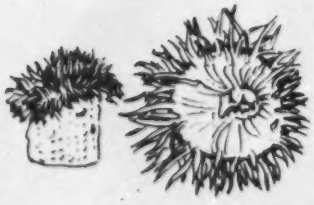
3. Which intertidal organisms are able to move around – that is, are not permanently attached to any object (sessile)?

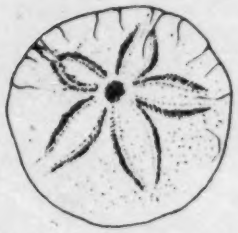
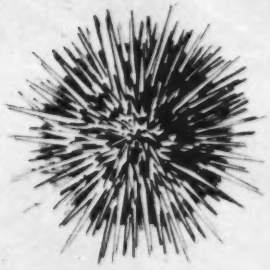
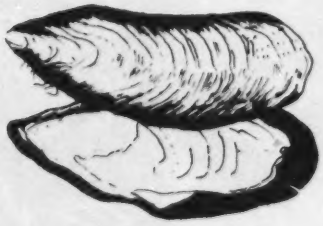
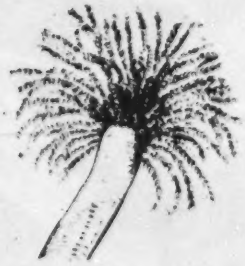
4. What methods do intertidal animals have for feeding?

GLOSSARY

Biology	Study of the physical characteristics, life processes, and habits of plants and animals.
Habitat	Region or type of environment where an organism is found.
Intertidal Zone	Area between the highest high tide and the lowest low tide.
Marsh	Low, soft wetland that is usually a productive nursery area for young organisms.
Organism	Any living thing.

ORGANISM	HABITAT (on or under rocks, in crevices, under seaweed, other)	NOTES (color, size, etc.)
Abalone 		
Chiton 		
Limpet		
Periwinkle snail 		

ORGANISM	HABITAT (on or under rocks, in crevices, under seaweed, other)	NOTES (color, size, etc.)
Turban snail		
Nudibranch		
Rock louse		
Sea anemone 		

ORGANISM	HABITAT (on or under rocks, in crevices, under seaweed, other)	NOTES (color, size, etc.)
Sand dollar 		
Sea urchin 		
California mussel 		
Tube worm 		

ORGANISM	HABITAT (on or under rocks, in crevices, under seaweed, other)	NOTES (color, size, etc.)
Acorn barnacle		
Goose barnacle		
Sea star (starfish)		
Bat star		

ORGANISM	HABITAT (on or under rocks, in crevices, under seaweed, other)	NOTES (color, size, etc.)
Hermit crab		
Purple shore crab		
Lined shore crab		
Sea palm		

ORGANISM	HABITAT (on or under rocks, in crevices, under seaweed, other)	NOTES (color, size, etc.)
Laminaria		
Nereocystis		
Coralline algae		
Macrocystis		

ORGANISM	HABITAT (on or under rocks, in crevices, under seaweed, other)	NOTES (color, size, etc.)
Feather boa kelp		
Rockweed		
Sea lettuce		
Gigartina		

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ADDITIONAL ACTIVITIES AT LEO CARRILLO

Draw a map of the tidepools and give names to different areas. How many inflows are there? How many outflows?

Write a poem, song, or story about the tidepools or something that lives here. Illustrate your story.

Sight 3 different kinds of birds. Describe their color patterns, beaks, feet, flight patterns.

Invent an activity that will help your classmates learn more about the tidepool community.

Put your thumb and index finger together to form a circle. Use this as a make-believe magnifying glass to go exploring with. You can also use a pipe cleaner or wire.

Invent new names for animals and plants. Try 5 of each. What is the main thing you considered while assigning a name?

Pick one tidepool area and draw a food chain using everything you see. Better yet, draw a food web!

Find 3 producers, 3 consumers, 3 reducers. Hint: reducers are scavengers.

How might this area appear in 100 years? What things will be different? Similar?

Find an animal with a color adaptation for survival. A behavioral adaptation for survival. Which were easier to find?

List some factors that influence the environment. Which are controlled by nature? By people?

What is the smallest living thing you can find?

Pick one animal.

How does it get its oxygen?
What keeps it from being washed out to sea?
Describe its mouth parts. How are they adapted for eating?
What does it eat?
How does this animal move itself around?
How does it catch its food?

Pick one plant.

How does its shape and structure help it survive?
Why does it live where it does?
Where else might it live?

ADDITIONAL ACTIVITES AT POINT MUGU

Discuss adaptations of warm-blooded and cold-blooded animals.

Take turns describing an animal's evironment and habits without mentioning its name. Have other students guess.

Discuss adaptations of deciduous (seasonally green) and evergreen trees.

Invent games that Indian children might have played.

Classify leaves. Sketch them, but don't take them.

Describe the bark of three different kinds of trees.

How might the bark help the trees?
Why doesn't grass have bark?
Can you identify a tree by feeling its bark?

Think of 5 adjectives to describe a tree.

Find 3 spider webs. Discuss their similarities, and their differences.

Close your eyes and imagine what your environment would look like if you were a tadpole. Snake. Hawk. Frog.

If you were a snake, what animals would you look for? Avoid? ignore?

Find a sign of an animal that had eaten a plant.

Invent an activity that will help your classmates learn more about the forest, stream, chaparral, or other communities.

Compare! Find a plant that lives only one year. Find a plant that lives many years.

Name 3 producers of this area. Three consumers. Three reducers.

Find a plant that uses another plant for support.

Count the number of different plants growing in a square foot.

Pair up and take turns closing your eyes or guiding each other. Feel, smell, listen. Try to identify trees by their bark.